

The use of real time ultrasound to estimate variance components for growth and carcass traits in Nelore cattle

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A data set was obtained from OB and HoRa Ranches, participants of the Program for Genetic Improvement of the Nelore Breed (PMGRN). Real-time ultrasound (RTU) technology was applied for collection of data on carcass traits in Nelore cattle in Brazil, to estimate genetic parameters and calculate EPDs for external 12-13th rib fat (UFAT), rump fat thickness (P8) and ribeye area (REA). The records were collected in Southeastern and Midwestern Brazil and animals were raised on pasture in a tropical climate. The 1,721 animals in the final data set were produced by 85 different sires with age at approximately 15, 18, 21 and 24 months of age.

The pedigree file used for calculation of the inverse numerator relationship matrix contained 25,941 animals, including those augmented so that each animal with data had two ancestral generations. The linear model included fixed effects for contemporary groups (herd-year-season-sex) and age of dam at calving. The model also included random effects for direct genetic. Data were analyzed under using a single and bivariate animal model, a Multiple Trait Derivative Free Restricted Maximum Likelihood (MTDFREML) was used to establish the variance components and genetic parameters. Heritability estimates for REA, UFAT and P8 were 0.29, 0.44, and 0.62, respectively. The EPDs for all traits presented a range that gives the possibility to significantly improve carcass quality in Nelore cattle. Ultrasound scanning produced consistent and heritable results for Nelore cattle and they may be used in genetic evaluation scheme to improve carcass traits.

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